ABSTRACT

SYNTHESIS OF ETHYL FERULATE AND BUTYL FERULATE BY FISCHER ESTERIFICATION UNDER MICROWAVE IRRADIATION

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Ferulic acid is known to have activity as an antioxidant. To increase its antioxidant potential, a modification was done through Fischer esterification reaction to turn ferulic acid structure into ethyl and butyl ferulate compounds. Both of these compounds were then synthesized using microwave irradiation. The microwave radiation was estimated to cause the compounds collision and heat production which lead to the quicker reaction and increasing yield. Ethyl and butyl ferulate were formed from ferulic acid and two alcohols with different lengths of carbon chains, namely ethanol and *n*-buthanol. So, the percentage difference between both compounds' yields was observed based on each of their steric effects. The results of the syntheses were purified using column chromatography tested further using TLC test, FT-IR spectrophotometry, UV-Vis spectrophotometry, and ^{1}HNMR spectroscopy. The overall results of this study concluded that the percentage of ethyl ferulate was 37.6±1.8%, considerably higher than butyl ferulate which was 19.1±2.9%.

Keywords: Ferulic acid, ethyl ferulate, butyl ferulate, Fischer esterification, microwave irradiation